
SUSQUEHANNA RIVER PILOT STUDY: LARGE RIVER ASSESSMENT PROJECT

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ABSTRACT

The Susquehanna River Basin Commission (SRBC) conducted a pilot study to determine appropriate methods of biologically assessing the large rivers of the Susquehanna River Basin. Data were collected at eight of ten original sites along the New York–Pennsylvania border during September 2002. To biologically assess the river, SRBC staff used four methods: vacuum benthic sampler; rock basket sampler; multi-plate sampler; and a traditional Rapid Bioassessment Protocol (RBP) III kick net. Additionally, water quality and physical habitat data were collected at the time of sampling.

Only 10 of 216 water quality data points exceeded standards, all of which were nutrient or total suspended-sediment parameters, indicating that the Susquehanna River, in this reach, contains fairly good water quality. High flows at the time of sampling precluded complete biological sample collection; however, several inferences can be drawn from the data set: (1) Rock baskets and RBP methods were most effective at collecting the large numbers of organisms needed for bioassessment; (2) rock baskets consistently had better scores for several metrics; and (3) assessment results tended to vary with location across the river. Physical habitat assessments may not be appropriate for a riverine system, due to the extreme width of the river in some areas.

For future projects, SRBC plans to use a combination of rock basket samplers and traditional RBP methods to effectively sample the Susquehanna River, as these proved to be the most efficient and consistent collection methods. Staff also will be considering alternative methods for assessing physical habitat and determining

ways to assess the reservoir system at the lower end of the Susquehanna River.

INTRODUCTION

SRBC has been assessing streams biologically throughout the Susquehanna basin since the late 1970s. When the U.S. Environmental Protection Agency (USEPA) introduced the first version of the RBP manual (Plafkin and others, 1989), SRBC adopted those methods for use in its interstate stream monitoring program and its rotating subbasin surveys. However, neither the previous nor current RBP methods (Barbour and others, 1999) used by SRBC in the aforementioned surveys accurately depict the biological integrity of the basin's large rivers: the mainstem Susquehanna; Chemung; West Branch; and Juniata Rivers. Thus, in 2002, SRBC initiated a pilot project to determine proper methods of biologically assessing the large rivers in the Basin. The information collected during the pilot project will be used in future years to select and calculate metrics for a benthic macroinvertebrate index of biotic integrity (IBI) to assess the biological conditions in the rivers of the basin. The data also will be used in SRBC's 305(b) assessments and to complement state assessment efforts.

Benthic macroinvertebrates were used to assess biological conditions for several reasons. They are sensitive to a wide range of stressors, have a wide range of documented pollution tolerances, and are found in a wide variety of habitats throughout lotic systems (Flotemersch and others, 2001a). Additionally, SRBC has background macroinvertebrate data from various sites on the large rivers of the basin from subbasin surveys and interstate streams monitoring.